

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing
(day/month/year)

15 FEB 2005

FOR FURTHER ACTION

See paragraph 2 below

Applicant's or agent's file reference

VM7031426003

International application No.

International filing date (day/month/year)

Priority date (day/month/year)

PCT/US04/29277

03 September 2004 (03.09.2004)

05 September 2003 (05.09.2003)

International Patent Classification (IPC) or both national classification and IPC

IPC(7): H05G 1/64 and US Cl.: 378/98.12, 98.11, 62; 382/130, 264

Applicant

VARIAN MEDICAL SYSTEMS TECHNOLOGIES, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.
For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US

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Form PCT/ISA/237 (cover sheet) (January 2004)

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WRITTEN OPINION OF THE
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Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

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Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims 5, 15, 22, 32 YES

Claims 1-4, 6-14, 16-21, 23-31, 33-47 NO

Inventive step (IS)

Claims 5, 15, 22, 32 YES

Claims 1-4, 6-14, 16-21, 23-31, 33-47 NO

Industrial applicability (IA)

Claims 1-47 YES

Claims NONE NO

2. Citations and explanations:

Please See Continuation Sheet

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

V. 2. Citations and Explanations:

Claims 1-4, 6-14, 16-21, 23-31, and 33-34 lack novelty under PCT Article 33(2) as being anticipated by Doi et al. (US 2003/0099388).

Regarding claims 1, 11, 18, and 28: Doi teaches a method or a computer readable medium having a set of stored instruction of processing a x-ray image, comprising: collecting a first x-ray image (upper section image) and a second x-ray image (lower section image); determining a composite image (mask image) based on the first (upper section image) and second x-ray images (lower section image); collecting a third x-ray image (target section image); and adjusting (subtraction) the third x-ray image (target section image) based on the composite image (mask image) (Figure 5(b)).

Regarding claims 2, 12, 19, and 29: Doi teaches the first, second, and third x-ray images are generated in a sequence (upper, target, lower images).

Regarding claims 3, 13, 20, and 30: Doi teaches the first, second, and third x-ray images are each contains an image of at least a portion of an animal body (22).

Regarding claims 4, 14, 21, and 31: Doi teaches the determining a composite image comprises performing a image averaging on the first and second x-ray images (linear interpolation).

Regarding claims 6, 16, 23, and 33: Doi teaches the image averaging is performed based on a weighted average (linear, equal weighted, interpolation).

Regarding claims 7, 17, 24, and 34: Doi teaches the adjusting comprises subtracting the composite image from the third x-ray image (118).

Regarding claims 8 and 25: Doi teaches a system for processing a x-ray image, comprising: means (32) for collecting a first x-ray image (upper section image) and a second x-ray image (lower section image); means (36) for determining a composite image (mask image) based on the first (upper section image) and second x-ray images (lower section image); means (32) for collecting a third x-ray image (target image); and means (36) for adjusting the third x-ray image (target image) based on the composite image (mask image).

Regarding claims 9 and 26: Doi teaches the means for determining a composite image comprises means (36) for performing an image averaging (linear interpolation) on the first and second x-ray images.

Regarding claims 10 and 27: Doi teaches the means for adjusting comprises means for subtracting (118, column 6, line 62) the composite image from the third x-ray image.

Claims 35-47 lack novelty under PCT Article 33(2) as being anticipated by Takeo (US 6,125,166).

Regarding claims 35 and 43: Takeo teaches a method or a computer readable medium having a set of stored instruction of processing a x-ray image, comprising: obtaining a first x-ray image (41); obtaining a second x-ray image (42); and determining a composite image (43) based on at least a portion of the first (41) and second (42) x-ray images.

Regarding claims 36 and 44: Takeo teaches the first (41) and second (42) x-ray images are generated in a sequence (by scanning phosphor screen 5 and 7).

Regarding claims 37 and 45: Takeo teaches the first and second x-ray images each contains an image of at least a portion of an animal body (Figure 1).

Regarding claims 38 and 46: Takeo teaches the determining a composite image comprises subtracting at least a portion of the first

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In case the space in any of the preceding boxes is not sufficient.

x-ray image from at least a portion of the second x-ray image (Figure 1).

Regarding claims 39 and 47: Takeo teaches determining a value associated with a contrast of the composite image (column 19, line 14).

Regarding claim 40: Takeo teaches a system for processing a x-ray image, comprising: means (5) for obtaining a first x-ray image (41); means (7) for obtaining a second x-ray image (42); and means (30) for determining a composite image (43) based on at least a portion of the first x-ray image (41) and at least a portion of the second x-ray image (42).

Regarding claim 41: Takeo teaches the means for determining a composite image comprises means for subtracting at least a portion of the first x-ray image from at least a portion of the second x-ray image (Figure 1).

Regarding claim 42: Takeo teaches means for determining a value associated with a contrast of the composite image (column 19, line 14).

Claims 5, 15, 22, and 32 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest the systems and methods for processing x-ray images as claimed.

Claims 1-47 meet the criteria set out in PCT Article 33(4), and thus have industrial applicability because the subject matter claimed can be made or used in industry.